Oregon
Theodore Kulongoski, Governor

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October 8, 2009 *Also Sent Via E-mail*

Mr. Robert J. Wyatt
Northwest Natural
220 N.W. Second Avenue
Portland, OR 97209

Re: Segment 2 Capture Zone Test Plan
Former Gasco Manufacture Gas Plant Site
Portland, Oregon
ECSI No. 84

Dear Mr. Wyatt:

The Oregon Department of Environmental Quality (DEQ) reviewed the "Capture Zone Field Test Plan, Gasco, Portland, Oregon" dated September 2009 (Test Plan). On behalf of NW Natural, Anchor QEA, LLC prepared and transmitted the Test Plan to the U.S. Environmental Protection Agency (EPA) via e-mail on September 23, 2009. The Test Plan provides NW Natural's approach to assessing the influence of pumping uplands extraction wells on groundwater gradients beneath the uplands near the shoreline, and under the Willamette River along a portion of shoreline Segment 2. Segment 2 extends along the shoreline of property owned by NW Natural (NW Natural Property, or "Gasco" Site) from near the south side of the Fuel and Marine Marketing leasehold north to the US Moorings site. Groundwater and riverbank soils along Segment 2 have been identified as high priorities for source control due to contamination associated with historic operations of the former Gasco manufactured gas plant (MGP).

DEQ understands the primary goals of the work described in the Test Plan are to assess: 1) the influence of pumping uplands extraction wells on groundwater gradients below and into the river; 2) whether extraction well withdrawal rates predicted during source control measures (SCMs) planning and design, will result in hydraulic control/containment (HC&C) of uplands groundwater within Segment 2; and 3) if groundwater withdrawal rates need to be adjusted in consideration of in-water sediment work. The Test Plan includes NW Natural's recommended scope of work for collecting data to meet these project goals. In general, the scope of work includes:

- Drilling and installing three extraction wells and eight monitoring wells in the uplands;
- Drilling and installing nine piezometers in the river in selected nearshore and offshore locations;
- Conducting a series of pumping tests at extraction wells using a range of withdrawal rates;
- Monitoring river stage and groundwater levels in uplands and offshore installations during pumping tests; and
- Compiling and analyzing water level data.

Given the current in-water work window closes October 31st and to facilitate implementation of the overall Test Plan, NW Natural requested expedited review of the portions of the document specific to drilling and installing nearshore and offshore piezometers. In response, DEQ and EPA conducted a focused review of Section 3.3, Table 1, figures 1 through 5, and Appendix A (i.e., Piezometer Design) of the Test Plan. In addition, our review(s) considered NW Natural's October 2nd e-mail reply to DEQ's September 30th e-mail requesting additional details regarding drilling and installing piezometers.

DEQ's and EPA's focused review comments are respectively provided below and attached. NW Natural should closely review the attachment to ensure that all comments are considered and addressed when responding to this letter.

GENERAL COMMENT

NW Natural proposes installing piezometers at depths ranging between -5 and -50 feet elevation using the City of Portland vertical datum [CoP]). It is unclear how this approach will provide data to assess uplands and in-water groundwater capture given groundwater contamination occurs at depths greater than -50 feet CoP. For example, data collected in the northern portion of Segment 2 indicate total cyanide concentrations beneath the shoreline exceed the screening criterion of 0.140 milligrams per liter down to at least approximately –75 feet CoP. Based on the vertical distribution of groundwater impacts, NW Natural should add deeper piezometers to the Test Plan scope of work at selected locations (e.g., PZ2 and PZ5). The purpose of installing deeper piezometers is to collect data to assess the vertical influence of pumping extraction wells over depth intervals of contaminated groundwater (e.g., greater than -75 feet CoP). The actual depths of the deeper piezometers should be based on observations made in the field during drilling (e.g., the depth and thickness of silt layers, depth of occurrence of "medium grained sand" unit). DEQ considers additional deeper piezometers necessary for achieving the data collection objectives of the Test Plan, and expects the installations to be included in the in-water drilling effort currently being organized by NW Natural.

SPECIFIC COMMENTS

Section 3.3, 2nd paragraph. NW Natural indicates piezometers PZ1-5, PZ1-20, PZ2-5, and PZ2-20 were completed in March 2009 to assess whether the installation provide representative groundwater measurements in river sediment. DEQ understands the data collected from these existing piezometers is graphically compiled on Figure 4. To date, DEQ has not received documentation of this work. NW Natural should provide drilling and installation procedures and as-built drawings for the existing piezometers for our information and files prior to initiating the piezometer drilling and installation work described in the Test Plan.

Figure 1a. Topographic and bathymetric contour line labels are missing from the figure and should be added for reference and completeness.

Figures 1a, 1b, and 1c. Offshore drilling and sampling locations along in-water transects B and C should be added to the figures for reference and completeness.

Figures 1, 2, and 4. Table 1 and Figure 3 indicate that elevations in the Test Plan are referenced to the CoP. This information appears to be missing from figures 1 (a, b, c), 2 (a, b, c), and 4. The figures should be reviewed and revised to include this information.

Additionally, Table 1 suggests elevations referenced to the CoP are equal to "mean sea level" (MSL) elevations. For clarification, elevations referenced to the CoP are not equivalent to MSL. DEQ refers NW Natural to EPA's attached Comment 8 for additional details regarding vertical datums. Figures 1 through 4 should be reviewed in the context of this comment to ensure elevations are correct for the vertical datum used. The figures should be revised as appropriate.

Appendix A. DEQ has numerous comments regarding Appendix A as follows.

- Based on previous drilling work completed in the river, piezometers are going to be constructed in offshore areas potentially impacted by MGP waste directly discharged and/or deposited as a result of historic Gasco MGP operations. Consistent with in-water drilling work completed previously, where piezometers will be installed at depths greater than approximately 25 to 30 feet below mudline, NW Natural should be prepared to use the double-case method if visible evidence of MGP waste (e.g., product or sheen) is observed during drilling. The double-case method will reduce the potential for downward vertical migration of contamination during drilling and piezometer installation.
- Although not specified in the Test Plan, given the potential for NW Natural to encounter heavily impacted sediment during drilling, DEQ presumes boreholes will be sealed using the organoclay-bentonite slurry approved for use at the site by the Oregon Water Resources Department and DEQ.
- In-water work conducted previously offshore from the Gasco Site encountered heave during drilling. Heave could make the collection of representative geologic samples difficult. Furthermore, heave has the potential to interfere with constructing piezometers at the designated depths, and could prevent construction materials (e.g., sand, organoclay-bentonite) from being placed over the desired depth intervals. NW Natural should provide details regarding how heave will be controlled to ensure piezometers are constructed as designed (see EPA Specific Comment 1 for related comments).

Additionally, NW Natural has specified completion depths for each of the nearshore/offshore piezometers. Although not specifically discussed in the Test Plan, DEQ understands certain piezometers will be installed in the upper "fine to medium grained sand and silty sand" (e.g., PZ3-10, PZ5-20) and deeper "medium grained sand" (e.g., PZ1-50, PZ043, PZ3-40, PZ5-50). As such, actual depths of completion will be based on geologic observations made during drilling. The criteria for selecting the actual depth of installation should be described.

NW Natural should confirm DEQ's understanding of each item and/or provide the information indicated prior to initiating field work.

NEXT STEPS

DEQ understands NW Natural is currently arranging drilling equipment and a barge to conduct nearshore and offshore piezometer drilling and installation. Given the timeframe for conducting the proposed work, DEQ approves NW Natural moving forward with scheduling field work. However, approval for initiating the drilling work is contingent on DEQ receiving written responses to each of the comments above and to EPA's attached comments.

DEQ is not requesting the Test Plan be revised at this time. DEQ will review and comment on the remainder of the Test Plan at a later date. In the event the Test Plan is revised and resubmitted, NW Natural should plan on updating the sections pertaining to nearshore/offshore piezometers in the revised version of the document.

Please contact me with questions regarding this letter.

Sincerely,

Dana Bayuk
Project Manager
Portland Harbor Section

Attachment: EPA comments (dated October 8, 2009)

Cc: Patty Dost, Pearl Legal Group, LLC
John Edwards, Anchor QEA
Carl Stivers, Anchor QEA
Rob Ede, Hahn & Associates
Kristine Koch, EPA
Sean Sheldrake, EPA
Tom Gainer, NWR/PHS
Henning Larsen, NWR/SRS
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